

REMARKS

Claims 1-6 are pending in the application, and are rejected. Claims 2 and 3 are herein canceled. Claims 1 and 4-6 are herein amended.

Claim Rejections - 35 U.S.C. §103

Claims 1-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nagaura (U.S. Patent No. 5,935,731) in view of Opprecht et al. (U.S. Patent No. 4,495,397).

With respect to claims 1, 4, 5 and 6, the Examiner asserts that Nagaura teaches a conductive connecting tab (7) mounted on a battery element (1) and connected to an inner wall surface of a battery case (Fig. 1).

The Examiner notes that Nagaura is silent to the welding method of forming a plurality of bumps for projection welding on the conductive connector tab, positioning said bumps face-to-face to inner wall surface of the case, and supplying welding current under the condition that part of electrodes are pressed on welding points, wherein the electrodes have contact areas larger than portions where the bumps are positioned. The Examiner notes that Opprecht et al. teaches a method of welding thin-walled aluminum or other soft metals, comprising the steps of forming a plurality of bumps on one piece to be welded to another, and applying welding electrodes having larger contact areas than the portions to be welded.

The Examiner concludes that the invention as a whole would have been obvious because even though Nagaura does not teach welding the current collector tab to an inner wall of the battery case by providing a plurality of bumps on the connection tab and bonding, Opprecht teaches that it is conventional to employ bumps on the welding surfaces of aluminum material and bonding in order to enable simultaneous welding of a plurality of projections without current

shunts; reduction of uneconomically high welding current; and proper position of the weld connection due to prior formed projections.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references, when combined, must teach or suggest all the claim limitations.

Applicants herein amend the claims to clarify the invention. Thereafter, Applicants respectfully disagree with the rejection, because not all of the claimed limitations are taught or suggested by the combination of cited references.

In Nagaura, it is described that a conductive connecting tab made of aluminum is welded to a battery case made of aluminum. Also, in Opprecht et al., it is described in the claims that a soft metal such as aluminum, aluminum alloy, etc. is bonded by projection welding.

In contrast, the present invention relates to the bonding of a conductive tab made of nickel to an inner wall surface or a cover surface of a battery case made of soft steel.

Nickel and soft steel are substantially different from aluminum in melting point, hardness, electro-conductivity, etc. Nickel and soft steel exhibit welding behavior substantially different from that of aluminum. One skilled in the art at the time of the invention would not look to a technique of welding aluminum for a teaching on welding nickel or soft steel. It is not logical to assert that the welding condition of the tab made of aluminum can be easily applied to the welding of the conductive tab made of nickel.

As described in the specification of the present application, bumps for projection welding with the different structure from the structure described in the cited references are provided to attain the object of the present invention.

As described above, the invention of the present application is different from the welding method described in the cited reference. Therefore, Applicants submit that the present invention would not have been obvious from the inventions described in the cited references.

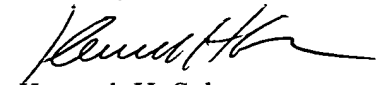
In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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